Personal Finance

7.2 Conditions of a Annuity

Compounding

Daily	365
Weekly	52
Bi weekly	26
Quarterly	4
Monthly	12
Semi Annually	2
Annually	1

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Calculating Total Loan Amount

Investigation 7.2

- Interest Rate
- Length of Term
- Payment Frequency

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Which investment is better?

Jaspreet is considering two investment options for saving $500 a month.

Option 1: monthly payment of $500, invested at 6% per year, compounded monthly.

Option 2: semi-monthly payment (on the 15th and the 30th of each month) of $250, invested at 5.85% per year, compounded semi-monthly.

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Calculating Total Loan Amount

Investigation 7.2

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Option 1: monthly payment of $500, invested at 6% per year, compounded monthly.

Option 2: semi-monthly payment (on the 15th and the 30th of each month) of $250, invested at 5.85% per year, compounded semi-monthly.

N=
I%=
PV=
PMT=
FV=
P/Y=
C/Y=
END

4. Assume that the interest rate and the payment remain the same for the investment option in step 3. Determine the future value of this investment option in 10 years.

5. What factors, other than the annual interest rate, affect the future value of an investment?

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Calculating Total Loan Amount

Investigation 7.2

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Which investment is better?

Jaspreet is considering two investment options for saving $500 a month.

Option 1: monthly payment of $500, invested at 6% per year, compounded monthly.

Option 2: semi-monthly payment (on the 15th and the 30th of each month) of $250, invested at 5.85% per year, compounded semi-monthly.

N= 120
I%= 6
PV= 0
PMT= −500
FV= 91 939.67
P/Y= 12
C/Y= 12
END

240
5.85
0
−250
91 406.54
24
24

4. Assume that the interest rate and the payment remain the same for the investment option in step 3. Determine the future value of this investment option in 10 years.

5. What factors, other than the annual interest rate, affect the future value of an investment? I% ↑ impact, but compounding

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Example **The Effect of the Term of the Loan on the Amount Paid**

Leezel needs to repay a $1500 loan. Her bank offers personal loans for one to five years at 8.5% per year, compounded monthly.

a) Leezel can afford to make monthly payments of $80. How many months will it take her to repay the loan?

b) What is the monthly payment if Leezel selects a one-year term?

c) What is the monthly payment if Leezel selects a two-year term?

d) What factors may influence Leezel's decision?

N=
I%=
PV=
PMT=
FV=
P/Y=
C/Y=
END

Apr 24-7:29 AM

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Example **The Effect of the Term of the Loan on the Amount Paid**

Leezel needs to repay a $1500 loan. Her bank offers personal loans for one to five years at 8.5% per year, compounded monthly.

a) Leezel can afford to make monthly payments of $80. How many months will it take her to repay the loan?

b) What is the monthly payment if Leezel selects a one-year term?

c) What is the monthly payment if Leezel selects a two-year term?

d) What factors may influence Leezel's decision?

[-130.93] x12 = 1569.96
[-68.19] x24 = 1636.36

- her other monthly expenses - budget

a) at $80 it will take 21 months

20.19 x $80 = $1616.00

Apr 24-7:29 AM

Payment Frequency

Kierra buys a new VW for $26000 including all applicable taxes at 3.6% compounded monthly, for 5 years. The dealership offers her various payment options.

i) What would her payments be if she chose monthly payments?

N=
I%=
PV=
PMT=
FV=
P/Y=
C/Y=
END

ii) What is the total price of the car.

What would her payments be if she chose biweekly payments?

N=
I%=
PV=
PMT=
FV=
P/Y=
C/Y=
END

What is the total price of the car.

Apr 24-7:35 AM

Payment Frequency

Kierra buys a new VW for $26000 including all applicable taxes at 3.6% compounded monthly, for 5 years. The dealership offers her various payment options.

i) What would her payments be if she chose monthly payments?

N= $12 \times 5 = 60$
I%= 3.6
PV= 26000
PMT= -474.15
FV= 0
P/Y= 12
C/Y= 12
END

ii) What is the total price of the car.

$474.15 \times 60 = 28449.00$

What would her payments be if she chose biweekly payments?

N= $26 \times 5 = 130$
I%= 3.6
PV= 26000
PMT= -218.66
FV= 0
P/Y= 26
C/Y= 12
END

122.97 Accelerated Biweekly
-230.09

$230.09 \times 122.97 = 28292.94$

What is the total price of the car.

$218.66 \times 130 = 28425.80$

↑ frequency = ↓ total cost

Apr 24-7:35 AM

Key Concepts

- Conditions such as the term of an annuity and the frequency of the payments are sometimes within your control.
- The change in one or more of the conditions of the annuity affects the future value, the present value, and the payment amount.

7.2 Conditions of an Annuity

q l-5, 7-9 p.417 & 418

Apr 24-7:32 AM

Closing Question
MAP 4C
7.2

Erica needs to repay a 14 000 debt. Her bank offers personal loans with terms of one to five years at 9.25% per year, compounded monthly.

Determine the monthly payment for a three year term.
N=
I%=
PV=
PMT=
FV=
P/Y=
C/Y=
PMT= END

Calculate the total interest paid on the loan.

Determine Erica's payment if she chooses to make bi-weekly payments.
N=
I%=
PV=
PMT=
FV=
P/Y=
C/Y=
PMT= END

Calculate the total interest paid on the loan.

May 16-7:29 AM

Closing Question
MAP 4C
7.2

Erica needs to repay a 14 000 debt. Her bank offers personal loans with terms of one to five years at 9.25% per year, compounded monthly.

Determine the monthly payment for a three year term.

N=	36	3 x 26 = 78
I%=	9.25	9.25
PV=	14000	14000
PMT=	446.83	205.80
FV=	0	0
P/Y=	12	26
C/Y=	12	12

PMT= END

446.83 x 36 = 16 085.88 205.80 x 79 = 16 052.40

Calculate the total interest paid on the loan.

16 085.88 - 14000 = 2 085.88 INT

2052.40 INT

Determine Erica's payment if she chooses to make bi-weekly payments.

N=
I%=
PV=
PMT=
FV=
P/Y=
C/Y=
PMT= END

Calculate the total interest paid on the loan.

May 16-7:29 AM

Nov 22-12:36 PM